ICE AND FROST

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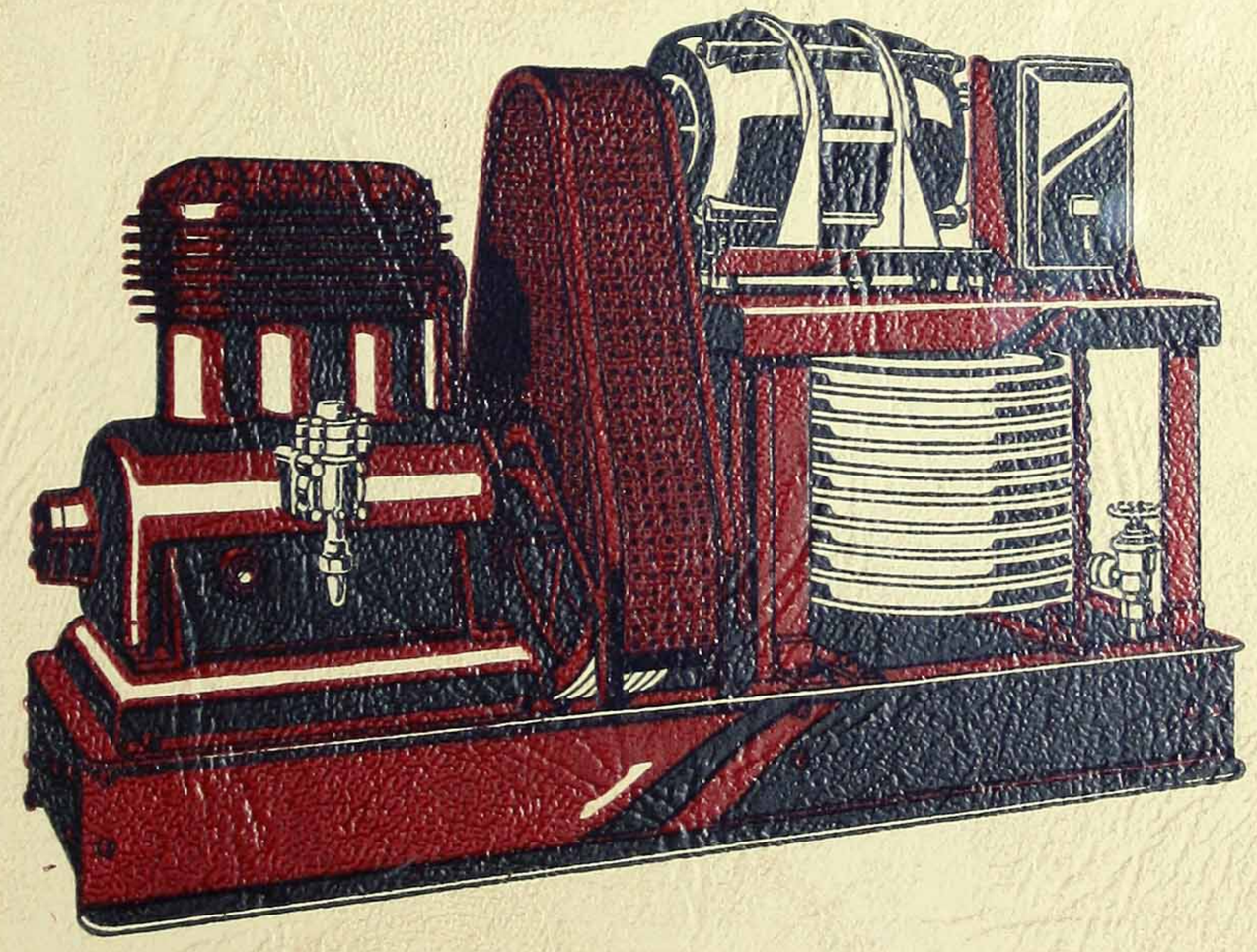

10 to 30 Ton

Low Pressure Refrigerating Units

Bulletin No. 98-D

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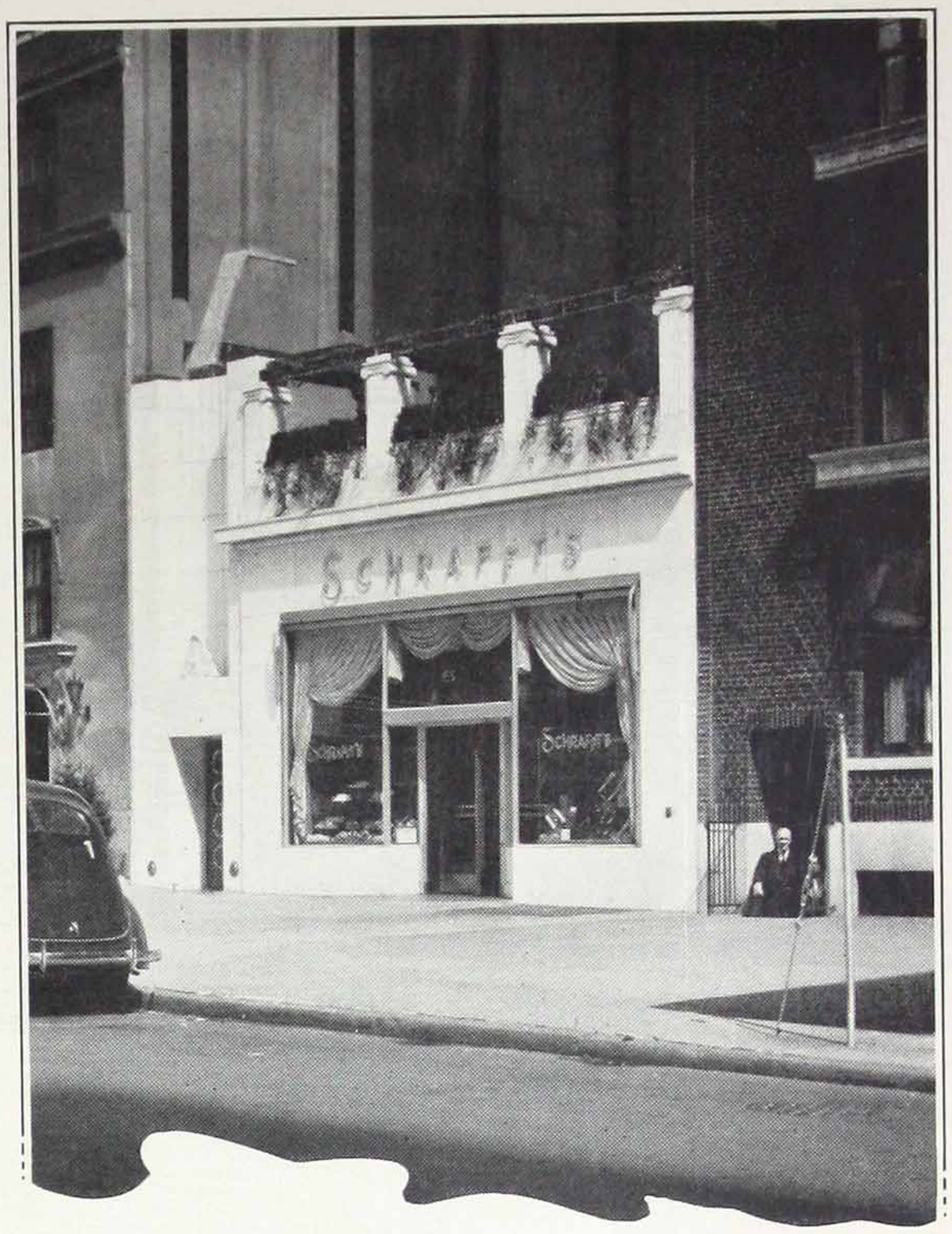
Schrafft's Restaurant at 155 E. 79th St., New York City, is Air Conditioned by a 20 Hp. Frick Refrigerating Unit



TRADE FRICK MARK

Low Pressure

Refrigerating Units

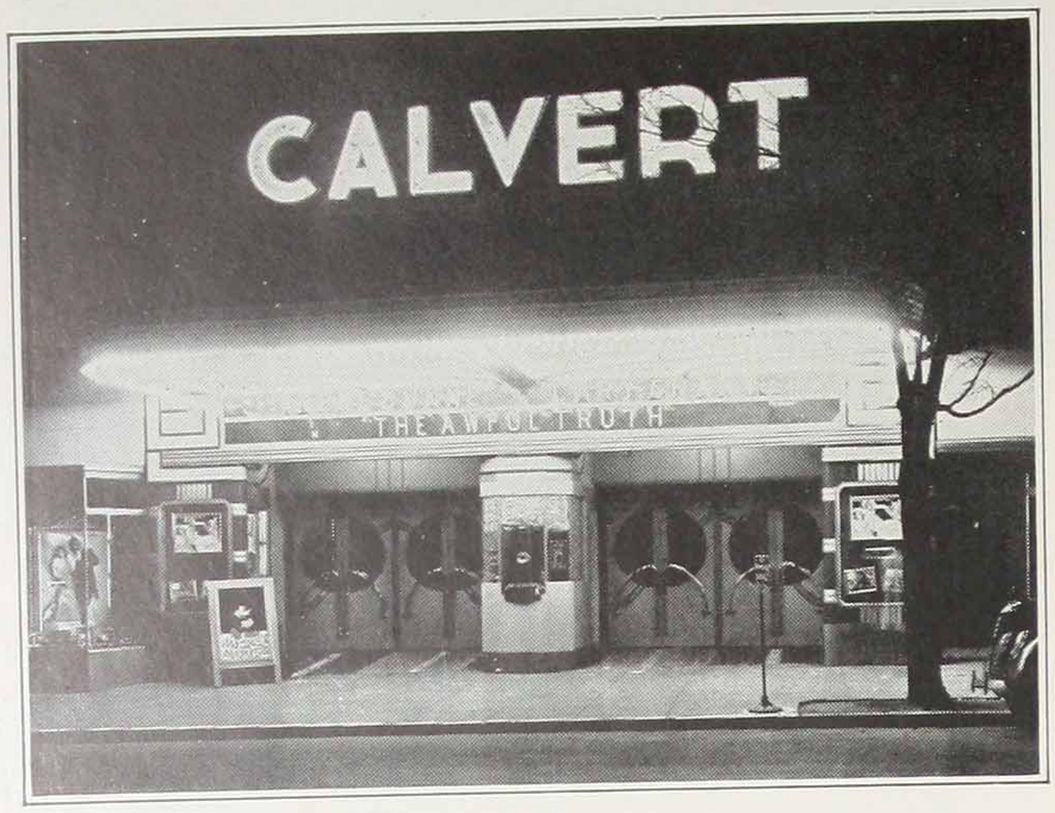
With Overhead Drive

One 20-hp. and Two 30-hp. Frick Units Cool the Trianon, Palm, Cocktail, and Ball Rooms of the Imposing Ambassador Hotel, N. Y. City

Air conditioning, at first considered a luxury, is now recognized as an almost indispensable aid in increasing the trade of theatres, restaurants, department stores, shops, office buildings, and many other places. In purchasing an air conditioning system, therefore, the buyer is no longer interested in the "stunt" value of the installation, but is looking for equipment which will give the greatest return for each dollar invested.

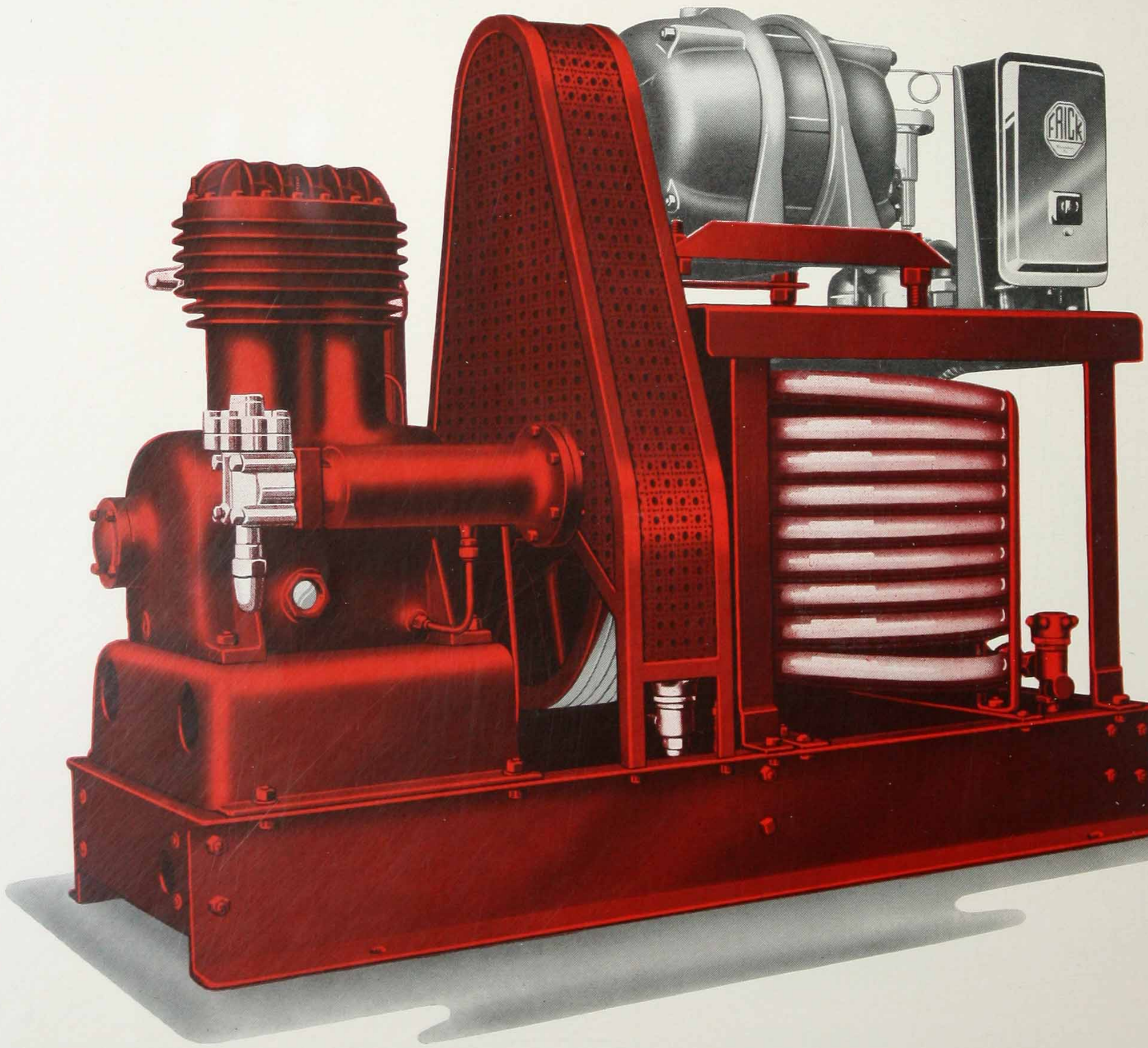
It is well known that the refrigerating machinery is the heart of an air conditioning system. Looked at from a business standpoint, it is essential that the cooling equipment be able to operate dependably over a long period of years, while delivering the greatest possible amount of "cold" for the current used in the driving motor.

Other qualities such as quietness, safety, ease of control, minimum amount of condensing water required, small floor space needed, and attractive appearance, are also important.



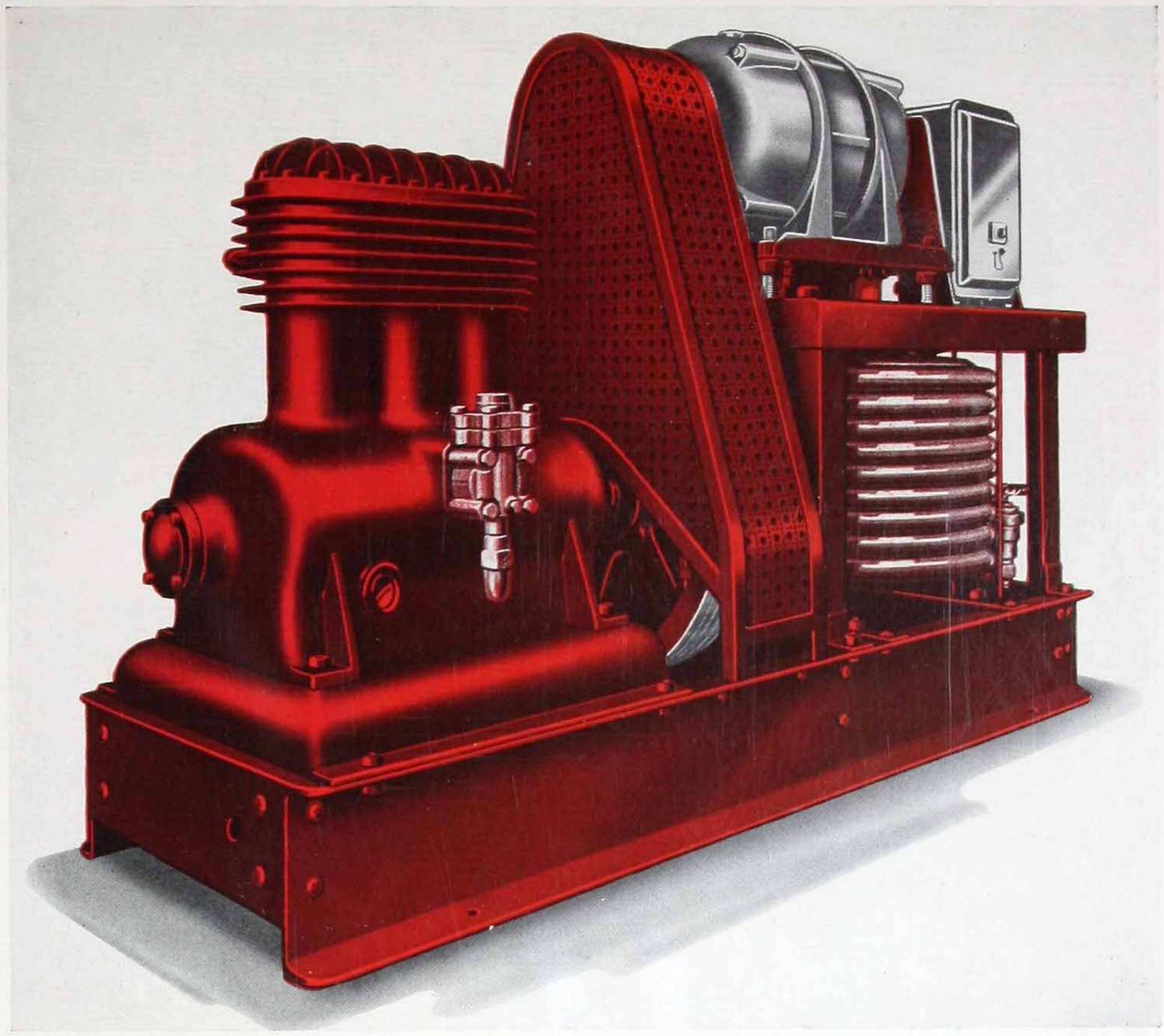
This Theatre is Among more than 30 in Baltimore and Washington using Frick Air Conditioning

We invite your inspection of Frick refrigerating units for air condition work, so that you can see for yourself how completely they measure up to these requirements. Those who have had experience with numerous machines of similar size will tell you that for reliability and economy there is nothing which even approaches the "Frick." These machines are built to withstand heavy continuous duty, and are patterned along the same lines that have made Frick ammonia units of similar size the standard of the refrigeration industry for many years past. Nearly 60 years experience as builders of commercial and industrial refrigerating equipment enables us to put into these machines the utmost sturdiness and efficiency.



Two-cylinder Frick Low Pressure Unit with Overhead Drive. Develops 10 Tons of Refrigeration from 10-hp. Motor.

15-Ton Three-cylinder Unit with 15-Hp. Overhead Motor. Note Sturdy Construction Throughout



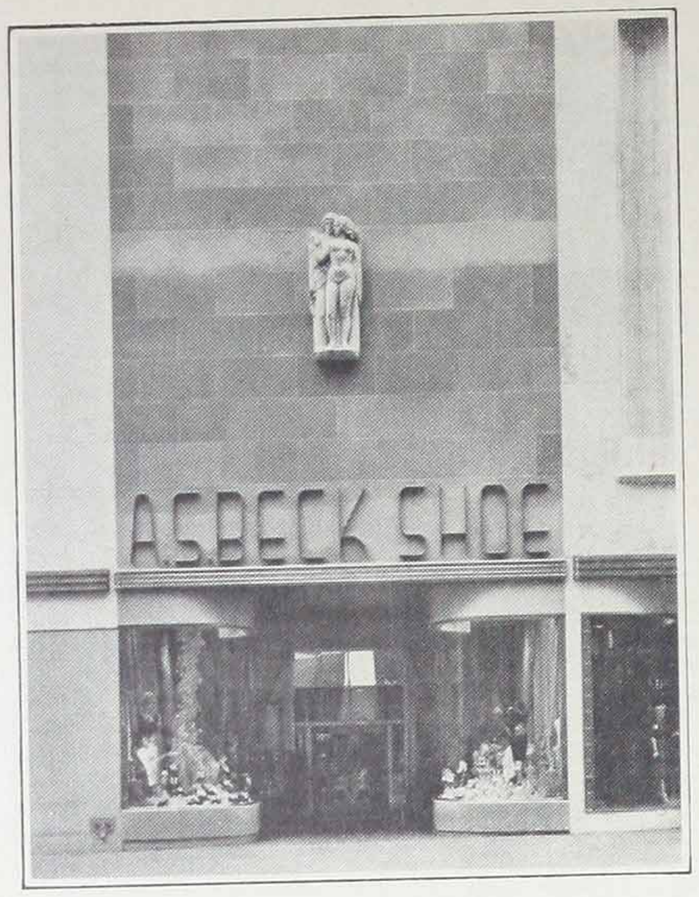
Frick low pressure refrigerating units with overhead drive are built in four sizes, with rated capacities of 10, 15, 20 and 30 tons. The smallest machine has two cylinders, the next size has three, and the next four, while the 30-ton machine has six cylinders. The cylinders of all four machines are made the same size, with 4¼-in. bore and 4¼-in. stroke. The cylinders of the 20- and 30-ton models are arranged in a V pattern.

Double ring-plate valves, developed especially for this service, provide the large passages necessary for filling and emptying the cylinders with gas at each stroke; the lightness of these valves assures quiet operation; safety cylinder heads, held down by springs instead of bolts, permit the elimination of wasteful clearance.

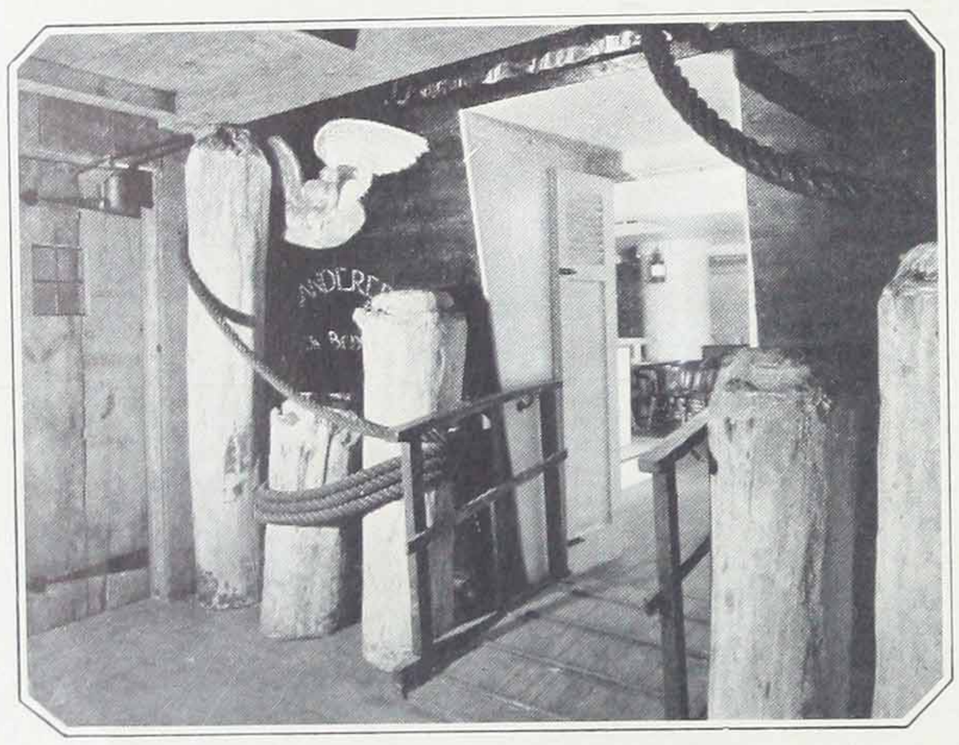
Accurately ground pistons (each equipped with three rings), honed cylinder walls, and thorough lubrication promote smooth running and longest life.

But another feature which directly influences the capacity of the Frick refrigerating unit is the design of the condenser. This consists of long coils of copper pipe of large diameter;

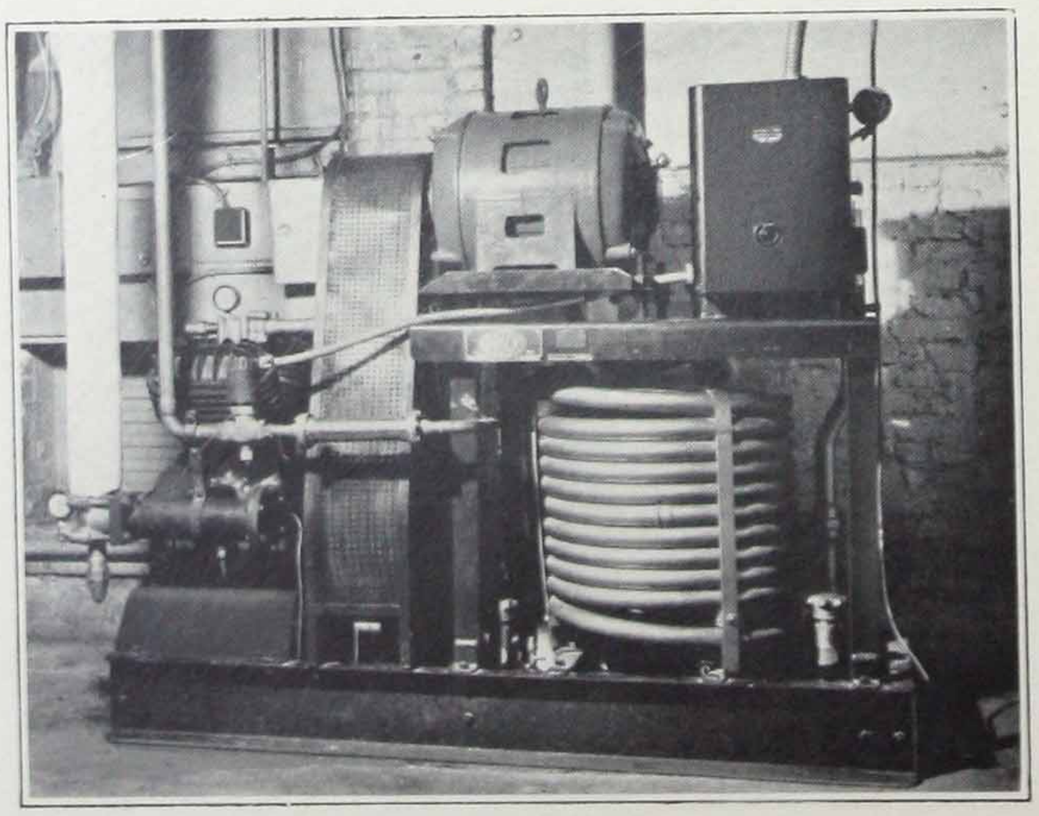
Exterior of Jack Dempsey's New Punch Bowl, 1619 Broadway, N. Y. C. The Restaurant and Bar are Air Conditioned by 20- and 15-hp. Frick Units



One of More than a Dozen Stores in the A. S. Beck Chain Which are Air Conditioned with Frick Refrigerating Units



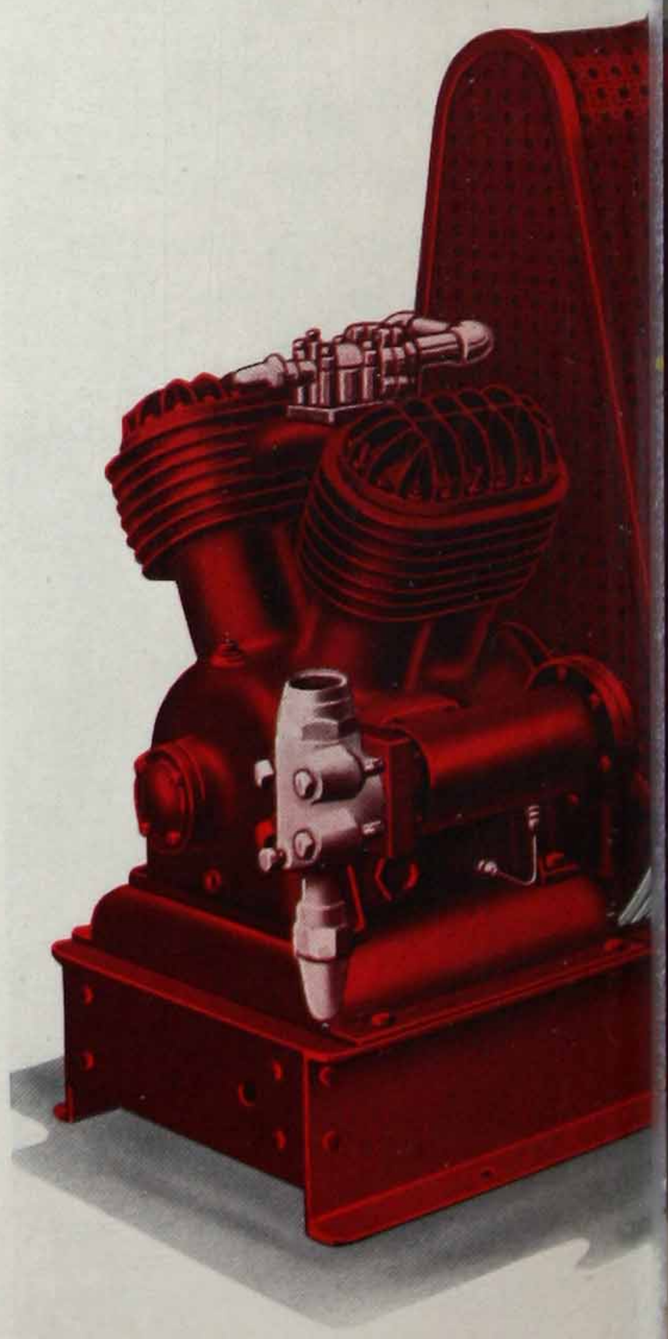
Entrance to the Popular Whaler's Bar at the Midston House, in New York City, where Frick Air Conditioning is a Feature



The Waldorf Restaurant at Springfield, Mass., is Air Conditioned by this 4-Cyl. Frick Unit

inside each pipe is nested a series of copper tubes which carry the cooling water, at relative high velocity. The hot gas enters at the top of the condenser and the cold water at the bottom, giving a counter-current effect and cooling the liquid refrigerant as much as possible. The smallest machine has a single copper pipe, inside which are four copper tubes. All the other units have two large copper pipes in each condenser. Three internal tubes are used in the pipes of the 15-ton unit; five tubes are used in the 20-ton size, and six in the 30-ton. In this way a tremendous amount of cooling surface is presented to the hot gas surrounding the group of water tubes. In addition, each stream of water is made to travel at a rapid velocity through a comparatively narrow passage, and in doing so carries away the maximum amount of heat. The flow of water is controlled by an automatic valve to suit the refrigerating load.

Mounted above the condenser are the motor, automatic starter, and water regulator. Four stout jack screws, at the corners of the motor base plate, allow the V-belts to be tightened to just the right tension for driving the compressor smoothly and without loss of power.



Four-Cylinder Frick Unit o

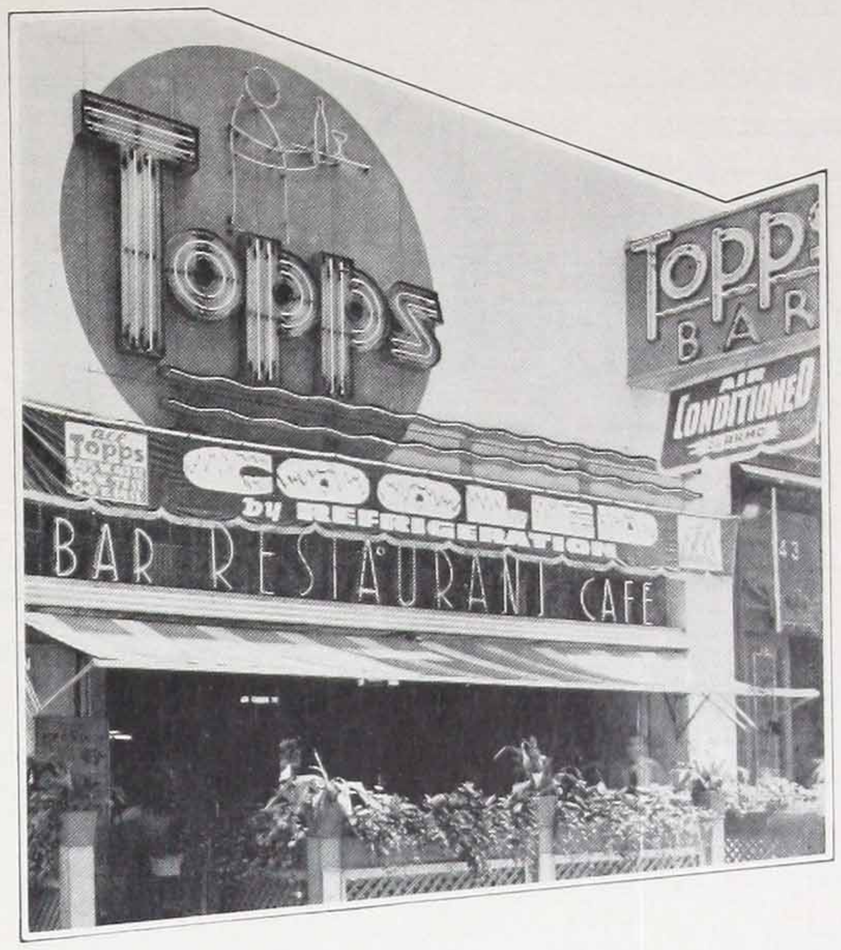
All parts of the unit are mounted on a strong base frame of steel channels, as shown. The liquid receiver is inside the base frame. Each unit is completely assembled and tested at the Frick Factory and is charged with oil and a sufficient amount of refrigerant to create a pressure, before being shipped.

When operating at a suction temperature of 40 degrees F., which is now considered the standard for air conditioning work, these Frick units will produce a ton of refrigeration for each horsepower expended in the motor. The high capacity thus made available is one of the reasons for the continued popularity of these machines.

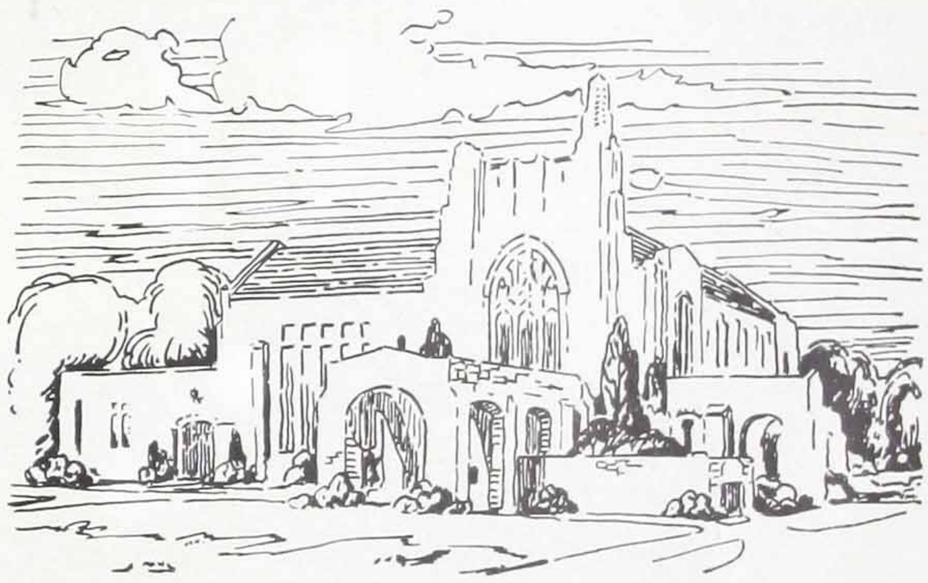
You can specify and purchase these superior units with the assurance that they are well designed, skillfully built, and honestly rated. Complete specification sheets for each size of machine are available upon request.

The units are applicable to a wide variety of services in addition to air conditioning, and are available through Frick Branch Offices and Distributors in principal cities throughout the world.

ons Refrigerating Capacity



One of the Five Topps Restaurants which are Equipped with Frick Machines of the Type Illustrated in this Bulletin



The Funeral Chapel of Lain & Son, at Chicago, Finds Frick Air Conditioning Much Appreciated

Child's Restaurant on 34th Street, N. Y. C., is Completely Air Conditioned by Frick 15- and 20-hp. Units. Food Service is Supplied with a Separate 5-hp. Unit

CONDENSED SPECIFICATIONS

COMPRESSOR—2, 3, 4 or 6 cylinders, reciprocating, single-acting. Suction and discharge valves are of proven design, and make possible high operating efficiencies. Compressor provided with ½" plugged connection for safety relief valve.

CYLINDER BODY—Cast semi-steel, with cooling fins on upper part of cylinder and head. Cylinder walls honed to a mirror finish.

BORE AND STROKE—4¼" by 4¼".

SPEED—514 R. P. M. with Freon-12.
514 R. P. M. with Methyl Chloride.

DISPLACEMENT—2-Cyl. Machine, 2150 Cu. Ft. per Hr.
3-Cyl. Machine, 3225 Cu. Ft. per Hr.
4-Cyl. Machine, 4300 Cu. Ft. per Hr.
6-Cyl. Machine, 6450 Cu. Ft. per Hr.

COMPRESSOR WEIGHT—2-Cyl., 300 lb. 3-Cyl., 390 lb. 4-Cyl., 470 lb. 6-Cyl., 565 lb.

SERVICE VALVES—Drop forged brass shut-off type, flanged, back seating, for O. D. soldered copper tube joints. Gauge connection on side of both suction and discharge valves. See table of sizes on opposite page.

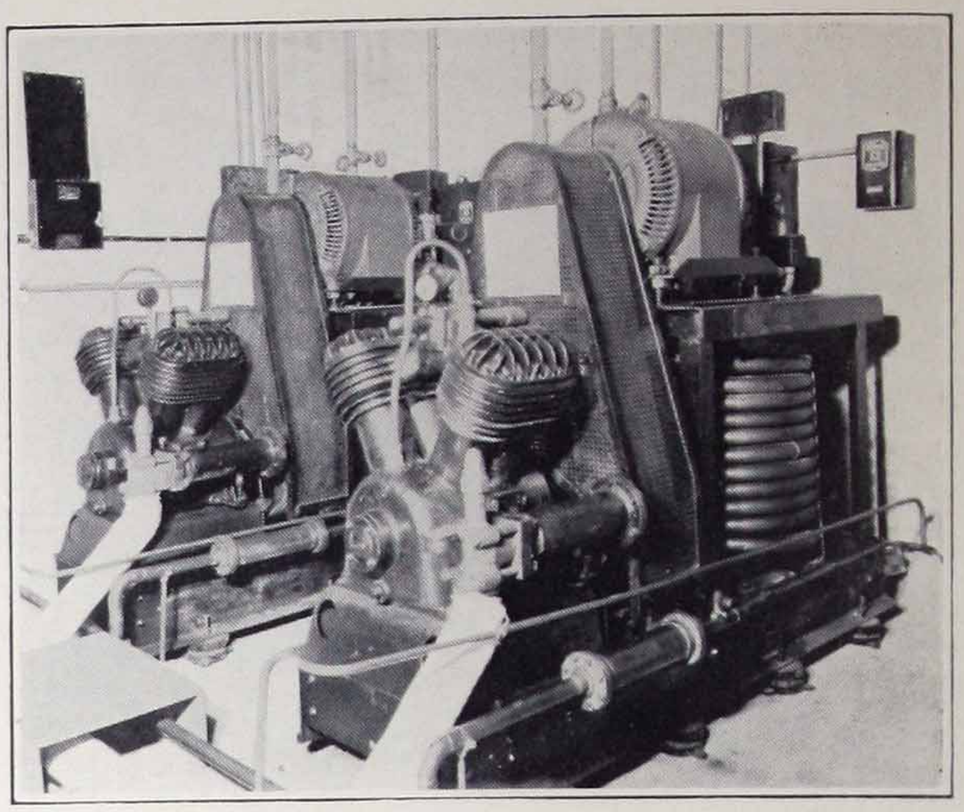
COMPRESSOR SEAL—Bellows and lubricated ring type, protected by guard.

CRANKSHAFT—Extra heavy drop-forged steel, with ground bearing surfaces.

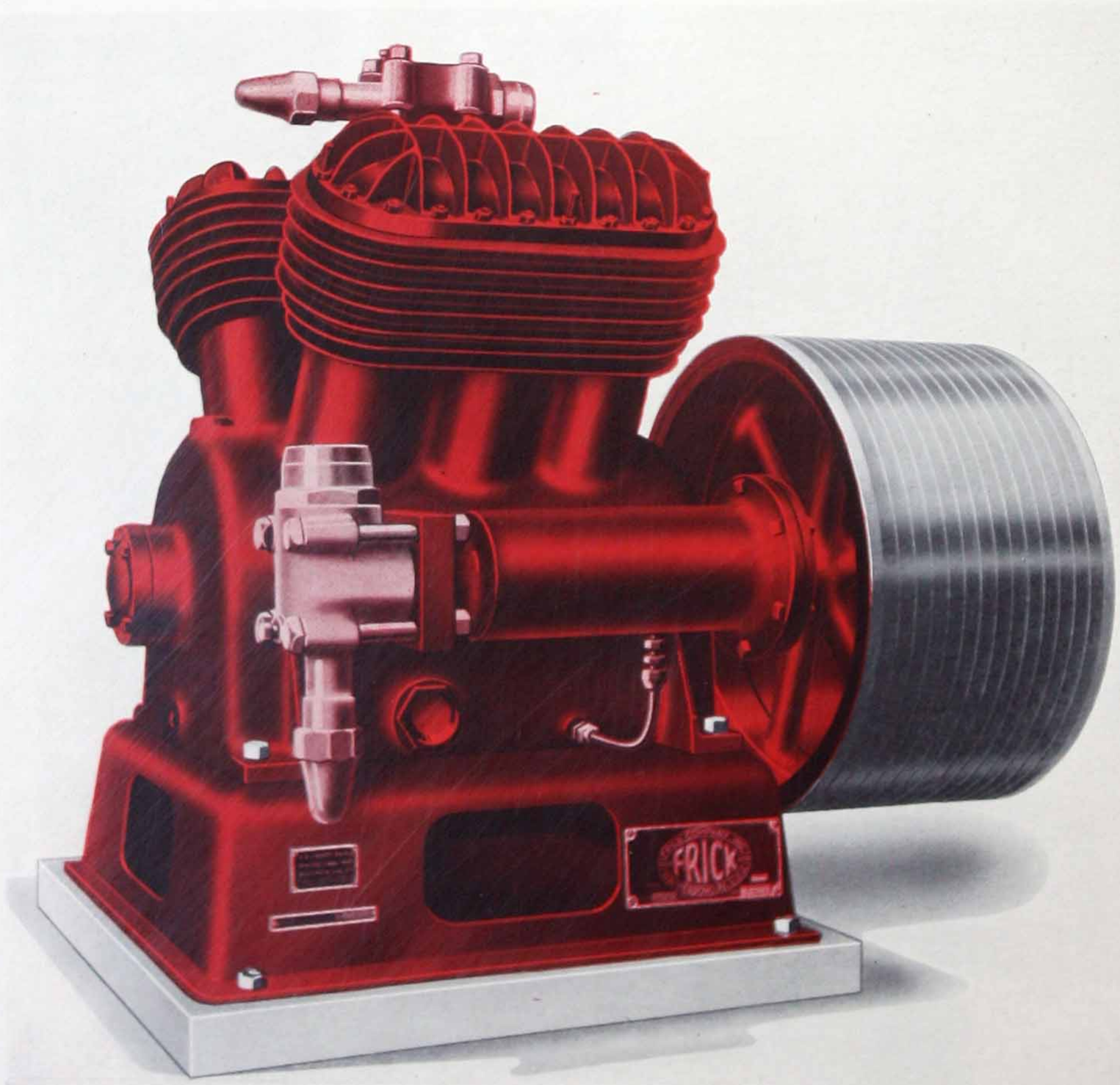
PISTONS—High grade cast iron, accurately machined; three rings per piston.

CONNECTING RODS—Drop-forged steel.

LUBRICATION—Crankshaft revolves in a bath of oil, supplying lubrication to all bearings, seal and cylinder walls. A supply of special refrigeration oil is charged into the compressor at factory. Visible oil level sight is provided in crankcase wall. Oil Charge:—2 Cyl. Machine, 2 Gal. —3 and 4 Cyl Machines, 2½ Gal.— 6 Cyl. Machine, 3 Gal.



The Terrace Theatre, on West 23rd St., N. Y. City, Can Laugh at the Menace of Hot Weather because of this Pair of Frick 4-cylinder Units



The Compressors in all 4 sizes are Available as Separate Machines when Desired. The Oil Separator on the Crankcase is Standard on this Entire Line of Machines, whether Furnished as Compressors only or as Units

DRIVE—Multiple V-belts, from overhead motor.

FLYWHEEL—Cast iron, 21½" outside dia., grooved for V-belts. For 2-Cyl. machine, 4⅝" face. 3-Cyl. machine, 6¼" face. For 4-Cyl., 8½" face. For 6-Cyl., 12⅝" face.

SHAFT DIAMETER—2¾" at bearings.

MOTOR PULLEY—Cast iron, grooved for V-belts. For 2-Cyl. machine, $6\frac{9}{16}$": for 3-Cyl. machine, $6\frac{9}{16}$", outside dia. For 4 and 6-Cyl. machines, $6\frac{11}{16}$", outside dia.

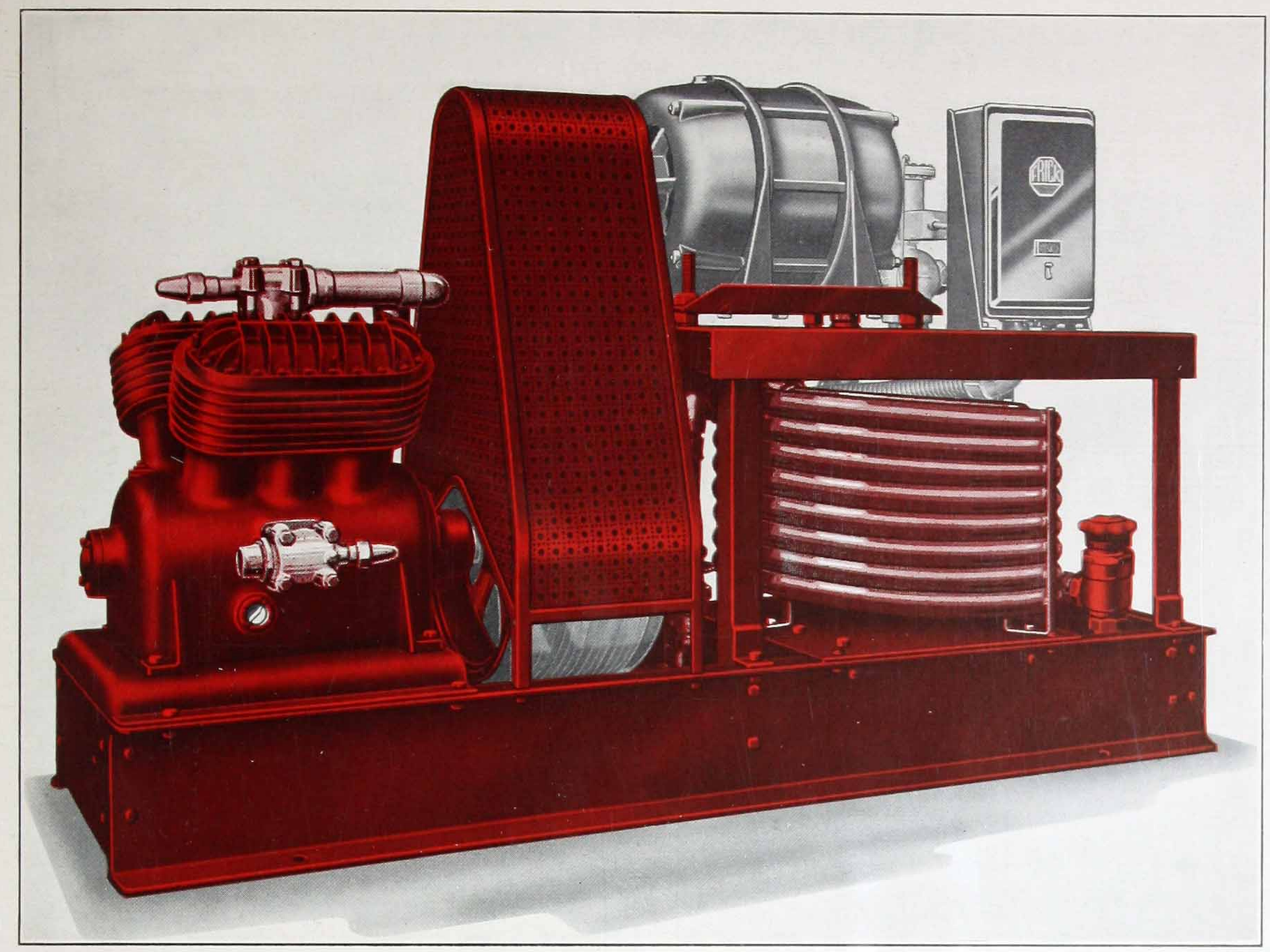
NO. OF V-BELTS—

2-Cyl. Mach.— 5, Type 90-B, Outside Circum. 92.8".
3-Cyl. Mach.— 7, Type 90-B, Outside Circum. 92.8".
4-Cyl. Mach.— 9, Type 105-B, Outside 107.8".
6-Cyl. Mach.—14, Type 105-B, Outside 107.8".

MOTOR—The motor is especially designed for refrigeration duty, and is built to give high starting torque with low starting and operating power consumption.

Standard motors include types as follows:

A. C. Polyphase: Squirrel-cage Induction, high torque.
Direct Current: Compound-wound.



Six-cylinder Unit of Thirty Ton Size. Note Heavy Base Frame of Steel Channels, between which the Receiver is Placed

CONDENSER—Water cooled: multiple copper water pipes inside large copper tube, using the highly efficient counter-flow principle.

LIQUID RECEIVER—Horizontal, seamless-steel shell with electric welded heads; provided with liquid indicator valve and plugged connection for safety relief valve, also fusible plug arranged for vent piping.

MAXIMUM ALLOWABLE CHARGE, IN LIQUID RECEIVER—
(⅔ capacity)

2-Cyl. Machine, 31 lb. Freon-12, 21 lb. Methyl Chloride
3-Cyl. Machine, 34 lb. Freon-12, 23 lb. Methyl Chloride
4-Cyl. Machine, 54 lb. Freon-12, 34 lb. Methyl Chloride
6-Cyl. Machine, 94 lb. Freon-12, 59 lb. Methyl Chloride

WATER VALVE—Electrimatic type, pressure regulated.

SAFETY CONTROL—High pressure cut-out is combined with water regulating valve.

BASE—Wide steel channels, riveted at corners.

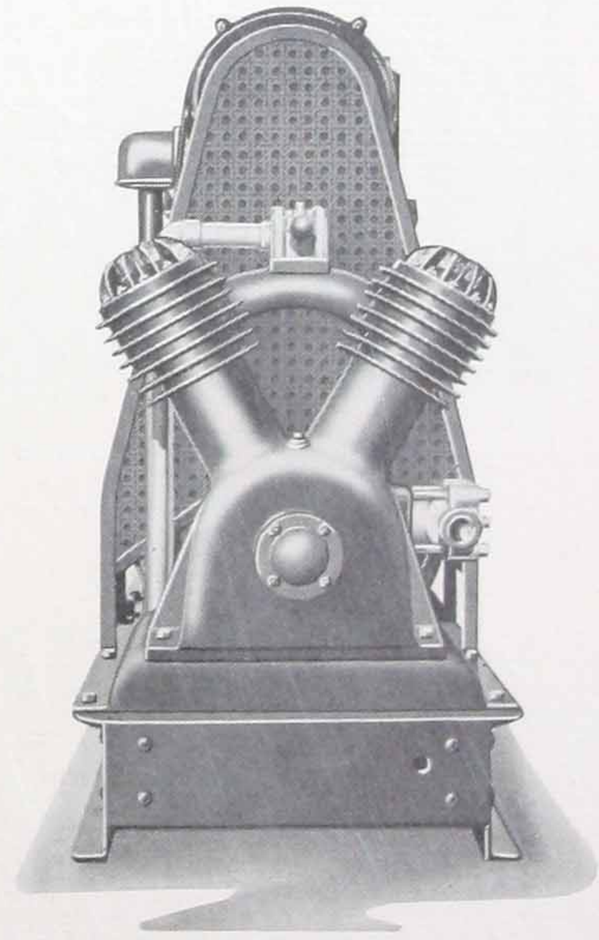
STRAINER—Furnished with the unit: to be installed in liquid line.

REFRIGERANT—Unit charged with oil and sufficient Freon-12 to create a pressure. Methyl Chloride optional.

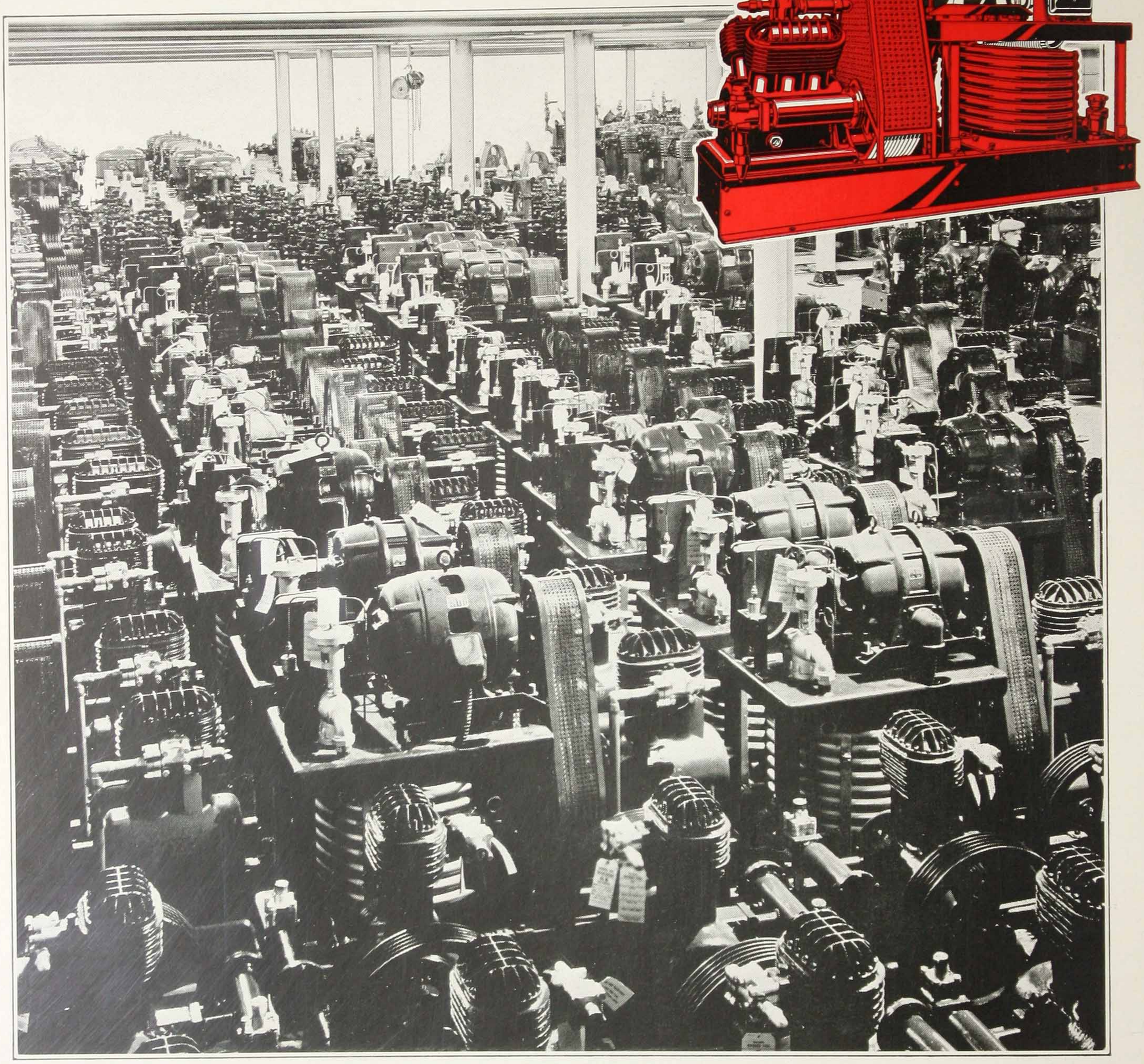
FINISH—All surfaces are especially treated to resist corrosion. The compressor and base are finished in waterproof Frick maroon enamel, and the condenser assembly is lacquered in copper bronze.

Capacity, T. R.	Motor Hp.	Unit No.	Dimensions Overall			Size Pipe Connections			Shipping Weight, Lb.
			Length	Width	Height	Liquid, O.D.	Gas, O.D.	Water, I.P.S.	
10	10	FW210FH	5′- 4⅜″	24½″	4′- 3 11/16″	⅞″	1⅜″	1¼″	1635
15	15	FW315FH	5′-10¼″	24½″	4′- 4¾″	⅞″	1⅝″	1¼″	1805
20	20	FW420FH	6′- 3″	26″	4′-11⅝″	1⅛″	1⅝-2⅛″	1½″	2240
30	30	FW630FH	7′- 6″	31″	5′- ½″	1⅜″	2⅝″	2″	3280

Figures given are not to be used for construction purposes.



End View, Showing how Units are Arranged to Pass through Doors of Ordinary Width



One of the Stock Rooms at the Frick Factory in Waynesboro, Penna., showing 4¼″ by 4¼″ Freon-12 Compressors and Refrigerating Units ready for prompt shipment. Larger Freon-12 and Ammonia Compressors appear in the background. The Frick Plant covers 30 acres and is equipped with the latest precision tools: the machines are built in small lots and receive individual attention from the most experienced mechanics in the refrigeration industry.

See list of Frick Branch Offices and Distributors on the outside cover of this bulletin

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API INTERNATIONAL

CCA

Frick Branch Offices

Albany, New York	122 Manning Boulevard
Atlanta, Georgia	1003 Mortgage Guarantee Building
Baltimore, Maryland	2133 Maryland Avenue
Boston, Massachusetts	716 Columbus Avenue
Charlotte, North Carolina	1013 Independence Building
Cincinnati, Ohio	3705 Carew Tower
Dallas, Texas	1314 Santa Fe Building
Kansas City, Missouri	426 Dwight Building
Los Angeles, California	541 East Eighth Street
Memphis, Tennessee	712 Sterick Building
New Orleans, Louisiana	910 Queen & Crescent Building
New York, New York	370 Lexington Avenue
Oklahoma City, Oklahoma	127 N. W. 13th Street
Palatka, Florida	1719 President Street
Philadelphia, Pennsylvania	718 Witherspoon Building
Pittsburgh, Pennsylvania	606 Empire Building
Saint Louis, Missouri	100 North Broadway
Seattle, Washington	312 Columbia Street

Frick Sales Representatives

Buffalo, New York	Mollenberg-Betz Machine Company, 20-26 Henry Street
Chicago, Illinois	Midwest Engineering & Equipment Co., 617 Fulton Street
Detroit, Michigan	Detroit Ice Machine Company, 2615 Twelfth Street

Distributors & Stock Points

Altoona
Allentown
Amarillo
Atlanta
Atlantic City
Baltimore
Birmingham
Boston
Bristol
Brooklyn
Cedar Rapids
Champaign
Charlotte
Chattanooga
Chevy Chase
Cincinnati
Cleveland
Columbus
Dallas
Denver
Erie
Evansville
Fond du Lac
Glasgow
Harrisburg
Harrisonburg
Hartford
Houston
Indianapolis
Jacksonville
Jersey City
Kalamazoo
Kansas City
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New York City
North Agawam, Mass.
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Richmond
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Sacramento
Saint Joseph
Saint Louis
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San Antonio
San Francisco
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Seattle
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Winchester, Va.

Overseas Distributors in Principal Countries Throughout the World

Imprimé Aux Etats Unis D'Amerique

Printed in U. S. A.

DEPENDABLE REFRIGERATION SINCE 1882

FRICK CO.

WAYNESBORO, PENNA. U.S.A.